

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF THE CLAIMS**

Claim 1 (withdrawn): A method for isolating nucleic acid molecules from tissue samples comprising:

- i) treating a tissue sample with at least one enzyme for tissue dissociation;
- ii) adding a lytic solution;
- iii) isolating nucleic acid molecules.

Claim 2 (withdrawn): The method of claim 1, further comprising a step of applying hydrodynamic shear force to the product of step (i).

Claim 3 (withdrawn): The method of claim 2, the method comprising:  
incubating in a first chamber a mixture of: at least one tissue sample, at least one enzyme for dissociation of the tissue sample, and buffer solution;  
disrupting the tissue sample in a second chamber acting as tissue disruption channel;  
lysing cells isolated from the tissue disruption channel in a third chamber; and  
collecting and isolating desired nucleic acid molecules and/or proteins in a fourth chamber.

Claim 4 (withdrawn): The method of claim 3, wherein the incubation in the first chamber is carried out at a constant temperature.

Claim 5 (withdrawn): The method of claim 3, wherein hydrodynamic shear force applied within the tissue disruption channel gradually reduces the tissue sample size until it is fully disrupted and cells are released.

Claim 6 (canceled).

Claim 7 (withdrawn): The method of claim 1, wherein the enzyme for tissue dissociation is a protease, cellulase and/or lipase.

Claims 8-14 (canceled).

Claim 15 (currently amended): A device for isolation of cells and/or nucleic acid molecules from tissue samples, the device comprising an enzymolytic tissue dissociation chamber wherein tissue is dissociated by enzymes, and a tissue disruption channel, the tissue dissociation chamber being in fluid communication with the tissue disruption channel, wherein the tissue disruption channel comprises at least one region of constriction, wherein at the region of constriction the tissue disruption channel has a smaller cross-sectional area relative to the average cross-sectional area of the tissue disruption channel.

Claim 16 (canceled).

Claim 17 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 15, comprising:

a first wherein the enzymelitic tissue dissociation chamber is for the site of incubation of a mixture of: at least one tissue sample, at least one enzyme for dissociation of the tissue sample, and buffer solution; and

a second chamber acting as a tissue disruption channel.

Claim 18 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 15, further comprising a wherein the device comprises a further chamber for recovery of the isolated cells released from said tissue samples.

Claim 19 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 15, comprising:

- a first enzymelitic tissue dissociation chamber for incubation of a mixture of: at least one tissue sample, at least one enzyme for dissociation of the tissue sample, and buffer solution;

- a second chamber acting as which is a tissue disruption channel wherein the tissue disruption channel is shaped such that tissue samples are fragmented and cells are released when a tissue sample is placed within the channel and subjected to a flow force;
  - a third chamber for comprising a lytic solution for suspending cells that are to be lysed;
  - a fourth chamber for the collection and isolation of nucleic acid molecules and/or proteins; and
  - a fifth chamber for waste collection;
- wherein the chambers are connected to each other in consecutive order of first through fifth chambers.

Claim 20 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 15, wherein the tissue disruption channel comprises:

- an inlet port for receiving a tissue sample from the tissue dissociation chamber;
- at least one region of constriction; and
- an outlet port for discharging a disrupted tissue sample to a chamber containing a lytic solution.

Claim 21 (canceled).

Claim 22 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 15, wherein the enzymolytic tissue dissociation chamber accepts is capable of receiving at least one tissue sample and at least one enzyme for tissue dissociation.

Claim 23 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 15, wherein the maximum volume of the enzymolytic tissue dissociation chamber is less no greater than 100 µl in-volume.

Claims 24-26 (canceled).

Claim 27 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 17, wherein the enzyme for tissue dissociation is a protease, a cellulase or a lipase.

Claims 28-30 (canceled).

Claim 31 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 15, wherein the device is a biological microelectromechanical system (bioMEMS) and/or a fully automated complete micrototal analytical system ( $\mu$ TAS).

Claim 32 (currently amended): The device for isolation of cells and/or nucleic acid molecules from tissue samples of claim 15, wherein the device is disposable.

Claims 33-34 (canceled).

Claim 35 (withdrawn): A method for cell isolation from tissue samples comprising:  
(a) treating a tissue sample with at least one enzyme for tissue dissociation;  
(b) applying hydrodynamic shear force to the product of step (a);  
(c) recovering the isolated cells.

Claim 36 (withdrawn): The method of claim 35, further comprising: adding a lytic solution to the isolated cells.

Claim 37 (withdrawn): The method of claim 35, further comprising: recovering nucleic acid molecules.

Claim 38 (canceled).

Claim 39 (withdrawn): The method of claim 35, wherein the enzyme for tissue dissociation is a protease, cellulase and/or lipase.

Claims 40-46 (canceled).